# 2007 Environmental Justice and Air Pollution Workshop: Best Practices in Collaboration, Tools and Resources

## Integrating Knowledge of Air Regulations into an Overall Community Strategy

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# Integrating Knowledge of Air Regulations into an Overall Community Strategy

by Wilma Subra

Community members living in close proximity to heavy and light industrial facilities, waste processing, treatment and disposal sites, mining operations and a whole host of other sources of pollution frequently request assistance in dealing with the pollution sources that are negatively impacting their health and quality of life. The community members complain that air emissions and chemical releases from the facilities are making them sick. The community members often need assistance in organizing the community as well as assistance with identifying sources of information about the pollution sources and sites. The community needs the information on which to base evaluations of the sources of pollution, chemicals released, magnitude and frequency of the releases and health impacts associated with the chemicals released. The information the community is seeking is needed to determine compliance with regulations and educate the community as well as local governmental agencies, elected officials and the regulatory agencies. The publicly available data the communities need are primarily required to be reported in order to comply with regulations and permit conditions and are usually self reported by the companies. Questions then arise as to whether the facility operations are in violation of the regulations or the permit conditions. These questions can best be answered by an evaluation of the various data sources that can be made available to the communities. These data sources consist of the following general types:

**Toxic Release Inventory**

**Ambient Air Monitoring Data**

**Reports on Accidental Releases and Upset Conditions**

**Mobile Monitoring Programs**

**Risk Management Plans**

**Permit Application or Modification Process**

**Permit Compliance Reports**

**Litigation - Notice of Intent to File Suit**

The following are brief discussions of each of the data sources and examples of how they have enabled communities to address air emissions in their communities and in some cases improved their health and quality of their environment.

**Toxic Release Inventory**

The Toxic Release Inventory (TRI) was initiated under the Emergency Planning and Community right to Know Act of 1986 (EPCRA) and expanded by the Pollution Prevention Act of 1990. The Toxic Release Inventory is the most user friendly, accessible and historical source of information on a facility specific and chemical specific basis of chemicals released into the air, land and water and transferred off site. The publicly available TRI data is on the Environmental Protection Agency TRI Explorer Web Site (www.epa.gov/triexplorer/) and the Right To Know Web Site (www.rtknet.org/tri/) for the calendar years 1987 through 2005. Community members can identify the chemicals released into their environment by each facility, track the quantities of each chemical released on an annual basis, track chemical release trends and use the TRI information to obtain health related impacts associated with each chemical.

The following is an example of the use of TRI data to plot the location of each industrial facilities, the quantity of chemicals released into the air and the trends in releases of specific chemicals released from one year to the next. The map represents the industrial facilities that are concentrated in a 9 mile by 10 mile area of Calcasieu Parish, Louisiana. A total of 29 of the 42 industrial facilities presented on the map report releases and emissions under the Toxic Release Inventory program. The map provides the community members with a graphic depiction of where the industrial facilities are located and allows the community to better understand the geographic locations of the facilities in relation to their communities, homes, schools, churches and work places. The table of TRI reporting facilities in 2005 in Calcasieu Parish are arranged from the largest to smallest quantities of chemicals released into the air. This information educates the community on the largest emitters and in combination with the map, the proximity of each source to the community. Those industrial facilities that have increased their air emissions from 2004 to 2005 are marked with an asterisk. Twenty-two of the 29 facilities (76%) have increased their fugitive, stack or both fugitive and stack air emissions from 2004 to 2005. This information allows the community to identify those facilities and plan strategies to require the industrial facilities to reduce their emissions. Further examination of the specific chemicals released by each facility and the toxicity of the chemicals allows the communities to plan strategies for chemical reductions based on toxicity.

(Insert Calcasieu Parish Map - *page 2 of Aug 13 fax*)

**2005 TOXIC RELEASE INVENTORY AIR RELEASES IN CALCASIEU PARISH, LOUISIANA**

| Facility | Fugitive Air Releases (pounds) | Stack Air Releases (pounds) |
|---|---|---|
| Firestone Polymers | 147,499* | 1,501,141 |
| Citgo Refinery | 468,040 | 759,201* |
| Conoco Phillips Refinery | 201,070* | 488,806 |
| Westlake Polymers | 20,155 | 366,647* |
| PPG | 246,766* | 72,667 |
| CCII Carbon | 112* | 255,769* |
| Sasol | 36,270 | 184,199 |
| Roy S. Nelson Entergy | 799 | 201,479* |
| Basell USA, Inc. | 70,551* | 57,646* |
| W. R. Grace | 1,600 | 123,797 |
| Westlake Petrochem | 32,108 | 77,891* |
| Lake Charles Carbon | 461* | 105,273* |
| Westlake Petrochem (Hwy. 108) | 9,437 | 42,911 |
| Lyondell Chemical | 10,265* | 41,291 |
| Georgia Gulf | 27,475 | 7,672 |
| Calcasieu Refining | 28,089* | 538 |
| Louisiana Pigment | 6,088* | 9,569 |
| Biolabs, Inc. | 843 | 14,628 |
| Westlake Styrene | 990 | 12,743* |
| Bollinger, Calcasieu | 13,034 | |
| Westlake Marine Terminal | 394* | 10,362 |
| Resin Systems | 8,040* | |
| Carboline | | 5,034* |
| Tetra Chemicals | 1,565* | 1,752 |
| Air Products | 368* | 2,719* |
| Certainteed | 1,100 | 800 |
| Conoco Phillips Lube Plant | 15* | 755* |
| Chem. Waste Management | 622* | 7* |
| Southern Ionics | | 269* |

*Increase in emissions from 2004 to 2005

**Ambient Air Monitoring Data**

The environmental regulatory agencies establish ambient air monitoring stations to perform monitoring for Criteria Pollutants (Carbon Monoxide, Nitric Oxide, Particulate Matter, Ozone, and Sulfur Dioxide) and Volatile Organic Chemicals (VOC). The monitoring frequency for the VOCs is once every 6 days from midnight to midnight on the same day throughout the nation. The data is averaged on an annual basis and compared to the annual ambient air standard.

The chemicals monitored by ongoing environmental agencies ambient air monitoring programs can be evaluated to determine the extent and magnitude of chemicals from the facility that have crossed the fenceline and impacted the air quality in the community. In communities where the ambient air is in excess of standards, the community can determine which facilities are responsible for the release of the standard exceeding chemical(s). The community can then work with the local, state and federal environmental agencies and the industrial facilities to obtain reductions in the specific chemical being released, and ultimately result in improved quality of the air in the community.

In Calcasieu Parish Louisiana, the Westlake ambient air monitoring station near the community of Westlake and the Environmental Justice community of Mossville exceeded the State of Louisiana annual ambient air standard for 1,2-Dichloroethane in the years 1996 and 1998 and had elevated levels of Vinyl Chloride in 1999. The Louisiana Department of Environmental Quality did not take any action at that time to address the sources of the emissions. The community used the TRI information to determine which industrial facilities in their area release the two chemicals, 1,2-Dichloroethane and Vinyl Chloride, that had crossed the industrial facilities fencelines and were present in the community air in elevated concentrations. The sources of the two chemicals are presented in the data below. This information was used by the community to inform the LADEQ, the industrial facilities, and local officials of the ambient air standard being exceeded. As a result the LADEQ worked with the industrial sources to reduce the emissions and the ambient standards were not exceeded again.

**WESTLAKE, CALCASIEU PARISH, LOUISIANA**
**AMBIENT AIR MONITOR RESULTS**

**1,2-Dichloroethane - Ambient Air Criteria 0.95 ppbv**

| Year | Annual Mean (ppbv) | Maximum (ppbv) |
|---|---|---|
| 1995 | 0.42 | 2.28 |
| 1996 | **1.16*** | 13.74 |
| 1997 | 0.40 | 8.78 |
| 1998 | **0.96*** | 6.82 |
| 1999 | 0.63 | 17.56 |
| 2000 | 0.13 | 0.85 |

| | | |
|---|---|---|
| 2001 | 0.18 | 0.99 |
| 2002 | 0.54 | 2.62 |
| 2003 | 0.15 | 1.48 |
| 2004 | 0.89 | 9.53 |
| 2005 | 0.19 | 1.16 |
| 2006 | 0.27 | 2.45 |
| 2007 | 0.13 (Partial Data) | 0.62 (Partial Data) |

*Exceeded Ambient Air Criteria

**Industrial Facilities Releasing 1,2-Dichloroethane near the Westlake Monitoring Station**

**Georgia Gulf**
**Conoco Refinery**
**PPG Industries**

**WESTLAKE, CALCASIEU PARISH, LOUISIANA**
**AMBIENT AIR MONITOR RESULTS**

**Vinyl Chloride - Ambient Air Criteria 0.47 ppbv**

| Year | Annual Mean (ppbv) | Maximum (ppbv) |
|---|---|---|
| 1999 | 0.12 | 0.83 |
| 2000 | 0.08 | 0.76 |
| 2001 | 0.10 | 2.36 |
| 2002 | 0.22 | 1.02 |
| 2003 | 0.10 | 1.12 |
| 2004 | 0.10 | 0.59 |
| 2005 | 0.10 | 0.78 |
| 2006 | 0.16 | 1.07 |
| 2007 | 0.17 | 1.12 |

**Industrial Facilities Releasing Vinyl Chloride near the Westlake Monitoring Station**

**Georgia Gulf**
**PPG Industries**
**Certainteed**

The ambient monitoring stations in the North Baton Rouge area of Louisiana had annual ambient levels of Vinyl Chloride and 1,3-Butadiene in excess of the ambient air standards. The TRI data was again used to determine the sources of the chemicals released into the air and the

community worked with the LADEQ and the companies to address emission reductions. The community also requested that the LADEQ monitoring the VOC results on an ongoing basis in order to be able to determine if the annual ambient standards were going to be exceeded as the data was reported rather than waiting until the end of the year to calculate the annual averages.

In areas where there is an ambient air network of VOC monitoring stations, the monitoring results can be used by community members to plot the areas where the air quality exceeds the ambient air criteria. In the Environmental Justice community of Rubbertown in Louisville, Kentucky the West Jefferson County Community Task Force has established a network of six air monitoring stations for VOCs. The monitoring is performed once every 12 days for a 24 hour period in the residential areas adjacent to the large industrial facilities. Three monitoring sites are located in residential areas on the fencelines of industrial facilities, two in residential neighborhoods at an elementary and a middle school, and one at a control location. The chemical Chloroprene is released by only one of the industrial facilities in Rubbertown, DuPont Dow Elastomer and Chloroprene was detected in the air in excess of the ambient air standard more than 1.2 miles from the industrial facility. Vinyl Chloride, a known human cancer causing agent, is released by two industrial facilities in Rubbertown, Oxy-Vinyls and Noveon. The two facilities are located adjacent to one another. The Vinyl Chloride is detected in the air at all five monitoring stations at concentrations in excess of the ambient air standards and the Vinyl Chloride plume, at concentrations in excess of the ambient air standard, extends out a radius of 1.5 miles from the industrial facilities. The highest concentration of Vinyl Chloride in the air is detected on a regular basis at the Cane Run Elementary School which is located approximately 0.75 miles from the emitting sources. This type of information enables the community members to monitor the air quality on an ongoing basis, demand emission reductions, and work towards relocation of community member and the schools to locations out side of the air contamination plume.

**Reports on Accidental Releases and Upset Conditions**

Accidental releases, upset conditions, spills, and start ups and shut down operations frequently release large quantities of chemicals into the air, land and water. The severity of these events range from fires and explosions that injure and kill workers and community members to releases of large quantities of chemicals. The chemicals released during these events frequently cause public health impacts. The information on these events are required to be reported to federal, state and county agencies. Evaluation of these reports by community members have result in the identification of facilities that frequently have reportable events, that release the largest quantities of chemicals during such events, and have exceed air permit limits. The reports submitted by the industrial facilities also contain information on which events were preventable or not.

Accidental releases and upset conditions have been documented by the communities living around industrial facilities as well as by the EPA. These releases have been documented to have significant impacts on the communities adjacent to the industrial facilities. An EPA investigation of the frequency of releases and quantity of releases into the air came up with

startling results. Over a five year period (1994 - 1998), 24 million pounds of toxic chemicals were released into the air in EPA Region 6 (Texas and all the states that surround Texas) from accidental releases and upset conditions. Almost half of the quantity of chemicals released into the air were released by 11 facilities in Region 6, six in Texas and five in Louisiana. The EPA worked with the 11 industrial facilities plus Motive Refinery and Exxon Refinery to conduct the Episodic Release Initiative. The initiative was designed to evaluate the root causes of the accidental releases and develop a strategy to reduce the frequency and severity of the events.

**Accidental Releases and Upset Conditions from the ERNS Data Base from 1994-1998 for EPA Region 6 Dallas, TX.**

| Facility | Number of Releases | Quantity Released (pounds) |
|---|---|---|
| Chevron Chemical Port Arthur, TX | 128 | 886,237 |
| Cytec Industries Westwego, LA | 85 | 140,624 |
| Diamond Shamrock Sunray, TX | 114 | 193,199 |
| Dow Chemical Freeport, TX | 182 | 121,795 |
| Exxon Plastics Baton Rough, LA | 158 | 175,094 |
| Equastar (Lyondell) Channel View, TX | 110 | 104,753 |
| Phillips 66 Borger, TX | 378 | 7,194,706 |
| PPG Lake Charles, LA | 164 | 110,756 |
| Shell Chemical Norco, LA | 90 | 596,125 |
| Motiva Convent, LA | 52 | 126,180 |

| | | |
|---|---|---|
| Valero<br>Corpus Christi, TX | 55 | 142,510 |
| **TOTALS** | **1,516** | **9,791,979** |

Evaluation of Accidental Release information obtained by the communities from the county emergency response agencies has demonstrated that accidental releases and upset conditions are a frequent occurrence in their communities.

Excess Emissions from Accidental Releases and Upset Conditions have been documented to occcur in:

| | |
|---|---|
| Calcasieu Parish, LA | 33% of the days |
| Norco, St. Charles Parish, LA | 52% of the days |
| Port Arthur, TX | 66% of the days |

In each of these areas the maximum number of incidents per day are five to six events per day from one or more facilities.

The quantities of chemicals released as a result of Accidental Releases and Upset Conditions frequently exceed the permitted allowable quantities and result in negative health impacts. Integrating the accidental releases and upset conditions reported with community based odor and health symptom logs help community members identify which chemicals cause specific health impacts and assist communities in preparing for such events. In addition, the communities can present their compilation of the data to local, state and federal agencies and industrial facility management. Such presentations have resulted in a decrease in the frequency and severity of accidental releases, spills and upset conditions.

A focus by the communities on the preventable incidents also helps communities demand that the industrial facility work to address those incidents that are preventable first and then move to those that are not preventable. In the case of some industrial facilities, the accidental release reports did not contain information on whether the incidents were preventable or not. Based on the community bringing this issues to the attention of the LADEQ, the facility began evaluating and reporting whether the incidents were reportable or not.

A community focus on accidental releases and upset conditions has many aspects from the number of events, quantities of chemicals released, extent of area impacted, community health impacts, etc. Working on the accidental episodes can result in communities reducing their exposure while requiring the industrial facilities to operate in a safer manner with less impacts on the nearby communities. Demonstrating the community knowledge and understanding of accidental events can also assist the community in getting the attention of the facilities. In the first nine months of 2001, the number of notification events reported to the St. Charles Emergency Operations Center by the industrial facilities in the Norco, Louisiana area were compiled. The information was developed on a facility by facility basis and presented to the facility managers. The facility managers were somewhat taken aback by the information and

requested to be allowed to review their reporting records. The data was reported by each facility and reflected the events reported by the facilities to the St. Charles Parish Emergency Operations Center. The plant managers of the industrial facilities verified and concurred that the information was correct and reflected their reports of the events. It also became obvious to the community members that no one person at each facility had knowledge of the various data reports submitted to the local, state, and federal regulatory agencies. The community continues review the accidental release reports and incorporated the community health impacts from their journals into the accidental report information to assist the community in focusing their pursuit on cleaner facility operations in compliance with appropriate regulations and permit conditions.

**Notification Events Reported to St. Charles Parish Emergency Operations Center**

| **Facility** | **Events** | **Days** |
|---|---|---|
| Orion Refinery | 86 | 74 |
| Motive Refinery | 55 | 49 |
| Shell Chemical - East Site | 53 | 47 |
| Resolution Performance | 26 | 25 |
| Shell Chemical - West Site | 18 | 18 |
| **Total** | **238** | **141** |

**Mobile Monitoring**

Mobile monitoring programs performed by state and federal environmental agencies have provided data that community members can used to plot hot spots in their communities and identify, based on wind speed and direction, the probable source or sources of the polluting chemicals. The EPA Trace Atmospheric Gas Analyzer (TAGA) is a camper with instrumentation located inside. The instrumentation can measure Volatile Organic Chemicals, Criteria Pollutants, and Specific Toxic Heavy Metals. Meteorological data is recorded on a continuous basis and is correlated with the air monitoring data. The unit drives on the roads and highways in the areas surrounding the industrial facilities and maps out the chemicals polluting the air along the route. State agencies usually have similar but smaller in scale units that can be deployed into areas were chemicals are being released into the environment.

The EPA TAGA Unit was used to monitor the air in the petrochemical industrial areas of southeast Texas known as the Golden Triangle, just east of Houston. The monitoring was performed from January 27 through 31, 2003. The results of the monitoring in the Port Arthur area is presented on the following map and table. A total of 13 volatile organic chemicals were monitored and multiple trips were made on the roads surrounding the industrial facilities. The map depicts the different chemicals detected in the air when the wind was blowing from different directions and the chemicals were originating from the different chemical facilities.

The data from such mobile monitoring programs can be used to document that the chemicals being released from specific facilities are migrating off site and are present in the adjacent areas off- site in excess of acceptable air concentrations. The data can be used to target emission reductions from specific facilities through working with the facility, the regulatory agencies and the community itself. The community members can also use the data to establish their own air monitoring programs and demand that the regulatory agencies and/or industrial facilities establish fenceline monitoring programs. Where Industrial facilities are located along other industrial facilities fence lines, the industrial facilities will establish their own fenceline monitories to identify when pollutants are originating from adjacent industrial facilities and crossing their facility prior to impacting adjacent residential areas.

**[Insert Port Arthur Map and Table - *pages 3 & 4 of Aug 13 fax*]**

**Risk Management Plans**

The EPA enacted a Risk Management Plan Rule designed to make communities safer by providing information concerning risks associated with business operations (Amendments to the Accidental Release Prevention Requirements: Risk Management Program Requirements Under Clean Air Act Section 112(r)(7); Amendments to the Submission Schedule and Data Requirements; Final Rule. 69 FR 18819, April 9, 2004.) The rule covers 140 chemicals that are a risk due to toxicity or flammability. Companies that use, process, manufacture or store the chemicals must evaluate the potential risks the chemicals pose to the community. The companies must develop scenarios that estimate the potential community impact from accidental releases of the toxic and flammable chemicals.

The Worse Case Scenario is the rapid and complete release of the largest container of the chemical under conditions that would maximize its potential impact. The Planning Case Scenario most closely simulates "real world events" which involve smaller releases and allow safety systems to be included in the calculations.

The information provided by the Risk Management Plans can assist communities in determining the situation in their area and enable communities to work with the industrial facilities and the regulatory agencies to plan for and respond to emergency situations that have the potential to impact their communities. The Risk Management Plan information is available on the Right to Know web site under Resources (www.rtknet.org/tri/). In some communities, the communities are located in Vulnerable Zones and Planning Case Zones from a number of industrial facilities. This information provides the communities with the incentive to work with the industrial facilities to either reduce the Vulnerable Zone areas off site or relocate the community to areas outside of the Vulnerable and Planning Case zones.

The following table and figure present the Risk Management Plan information for the industrial facilities located in Norco, Louisiana along the Mississippi River north of New Orleans. The community of Norco (population 3,000) is sandwiched between two industrial complexes. On the west fenceline of the town of Norco are located the Union Carbide Catalyst facility and Shell Chemical West and Resolution Performance (previously a part of the Shell Chemical West facility). On the east fenceline of Norco are located the Motive Refinery, Shell Chemical East facility, Union Carbide Polypropylene Plant, the Tejas Fractionation Plant and the Valero Refinery (previously TransAmerican Refinery). The community of Norco is located within the Worse Case Vulnerable Zones of all the industrial facilities and within the Planning Case Vulnerable Zones of four of the industrial facilities. The location of the community in the vulnerable zones of multiple industrial facilities have been used to negotiate with the industrial facilities to appropriately address preparedness and response issues. In other communities the Planning Case Vulnerable Zones have been used by the community members living in the zones to request relocation and by the parents of children attending school in the vulnerable zones to request that the school system relocate the schools to areas outside of the zones.

**[Insert Norco Risk Management table and Planning Case Vulnerable Zone map -** ***pages 5 and 6 of fax*** **]**

**Permit Application or Modification Process**

The permitting process for a new facility and the permit modification process for an existing facility are processes where communities can become involved and can have major impacts. During the application process, agency review process and public comment and hearing process communities can provide input and obtain changes that:

-reduce air emissions,
-result in additional monitoring requirements and reporting of the monitoring data to the communities,
-provide for fenceline monitoring and additional samples being collected when trigger levels are exceeded,
-establishment of permit limits and monitoring requirements that allow the agencies to base enforcement actions, and
-allow for specific operational conditions that will lessen the impact on the community.

Communities have also challenged permit applications that contain extensive sections of the application that are marked confidential. The lack of availability of confidential information limits the communities ability to review the application.

**Permit Compliance**

Facilities are required to submit permit compliance reports to the agencies on an annual and semi-annual basis and on other
reporting schedules established in the permit conditions. A review of the compliance reports enables communities to evaluate compliance with the permit conditions and develop strategies to address the noncompliance issues.

A review of agency files will not only provide information on permit noncompliance but often reveals correspondence from the agency that refers to a process, air pollutant or emission source that has been the target of agency investigation. The facility may be investigation or compiling data on the situation but is declaring the information they are generating as confidential. The correspondence is an important mechanism to determine the situation and attempt to determine the extent and severity of the situation.

The Chemical Accident Safety Board investigates major industrial accidents. The Chemical Accident Safety Board reports of the events often include information on violations of regulations and permit conditions as a part of their reports. This information can be used by the community to plan strategies on how to improve permit compliance and what measures should be required to be taken to reduce the risk to community members living in close proximity to the facility.

**Litigation - Notice of Intent to File Suit**

When communities have attempted and exhausted other strategies to reduce and control air pollution from facilities, the community may consider litigation. The litigation approach may take a long time to resolve the issues but may be able to obtain short term positive results through the issuance of a notice of intent to sue letter. Once the Notice of Violations and Intent to File a Citizens Enforcement Suit has been issued to the facility, the facility management may come to the negotiating table during the notice period.

The Notice of Violations and Intent to File a Citizens Enforcement Suit is based on information compiled from the agency files, facility reports and accidental reports and upset conditions reports filed or not reported by the facility. These are all of the data sources that the community has had available for its review and has been used as the basis of the other strategies presented in prior sections of this report. The violations in the notice letter usually consist of Clean Air Act Violations, violations of permit emission limits, releases of pollutants in excess of permit limits without the regulatory agency's prior authorization and violations of notification requirements. An example of a recently filed Notice of Violations and Intent to File a Citizens Enforcement Suit on behalf of Louisiana Environmental Action Network against Exxon Mobile Chemical Company, Baton Rough Chemical Plant in Baton Rough, Louisiana is attached.

Once the community determines if the facility is responding to their satisfaction to the notice letter or not responding to the notice letter, the next step is deciding whether to proceed forward with the filing of the suit.

The strategies developed and implemented by various community groups are based on regulatory and permit condition violations and are used by the communities to improve their air quality, lessen the negative impacts on their health and improve their quality of life. All approaches do not fit the specific situations in each community. The strategies have to be developed with the input and concurrence of the communities and implemented with community commitment in order to address the air quality situations in their individual communities.